

# Mathematics Teaching 1

Teacher Licence  
Subjects      Requisites  
2 credit

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## 1. Course Description

It is necessary for students who want to get a teacher's license of high school mathematics to study both this course and "Mathematics Teaching 2".

In this course, students will learn the framework of high school mathematics which includes Mathematics I and Mathematics A using "Course of Study of high school mathematics" (edited by Ministry of Education). After that, students will produce a trial lesson. That is, they will analyze the purpose of the lesson, make a lesson plan, conduct the trial lesson, evaluate it and improve it. Through those activities, students learn communication skills in the classroom, methods of developing teaching materials and methods of using technologies in the classroom as needed.

## 2. Course Objectives

(1) Students can acquire the necessary mathematical knowledge as teachers of high school mathematics and can utilize them for teaching materials.

(2) Students can review high school mathematics from teacher's perspective and explain the system of high school mathematics.

(3) Students can design a trial lesson plan of high school mathematics and conduct it.

(4) Students can look back the trial lesson and find the viewpoint of improving the lesson.

(5) Students can understand the effective use of educational software and other information equipment, and can utilize them for lesson design.

## 3. Grading Policy

(1) Submitted items (Teaching plan and lesson plan written by the student who conducts a trial lesson, evaluation of trial lesson written by others). (35%) We will return them after scoring.

(2) 7 reports. (35%). We will return them after scoring.

(3) A term-end examination is conducted at the end of the term. (30%). Example answer and explanation are presented on LMS.

## 4. Textbook and Reference

### Textbook

Mathematics textbooks used in high school

edited by Ministry of education COURSE OF STUDY for High Schools Mathematics

ISBN-13:9784762505355 Gakkoutosho

### Reference

edited by Ministry of education COURSE OF STUDY for Junior High Schools Mathematics

ISBN-13:978-4536590129

Nihonn Bunkyou-shuppan Osaka

Software for mathematic education: "GeoGebra" and "Grapes"

## 5. Requirements(Assignments)

In the first lesson, we will distribute a list of teaching materials which includes the theme of each lesson, the unit name of high school textbook, the scope of COURSE OF STUDY and basic questions.

After the 4th class, the lessons consists of 2 patterns:

Pattern 1: Summarizes the mathematical content for each Unit

Pre-assignment: while referring to the list of teaching materials, please check the content of high school textbook and solve the basic questions. The answer is presented on LMS, so check it by oneself. (60 minutes)

In classes: we will summarize the contents of the unit, the points and the positioning in COURSE OF STUDY. In addition, students solve advanced problems in group work, and discuss them to other students.

Post-assignment: Students submit a report of the advanced problems in group work. (60 minutes)

Pattern 2: Lessons that cultivate practical skills during trial lessons.

Pre-assignment: In advance, a practice teacher discusses with his/her teacher about guidance proposals and prepares it. Other students should prepare the draft proposal and submit it in the class. (100 minutes)

In classes: the practice teacher conducts trial lesson and the other members evaluate according to the theme of the lesson. After the trial lesson, you will bring the evaluation and discuss with the group.

Post-assignment: We will submit the evaluation on trial lesson, based on group discussions.

## 6. Note

In junior high school and high school, it is important that students themselves feel mathematics is fun, touch mathematics, think by themselves, and discover mathematics. I want to devise a way to enjoy math by participating students while actually making teaching materials and doing simulated lessons. I would like for students to actively make remarks and participate.

## 7. Schedule

- [1]      Distribution of List of teaching materials, on how to proceed with lesson.  
Create a concept map of high school mathematics.

- [2] Learn how to use the math educational software Grapes, to develop teaching materials using it.
- [3] Learn about how to write lesson plans and teaching evaluation.
- [4] Pattern 1: the mathematical contents are Numbers, Expressions and Calculation (Mathematics I), Quadratic Functions(Mathematics I).
- [5] Pattern 2: the theme of the trial lesson is how to make a lesson plan.
- [6] Pattern 1: the mathematical contents are Figures and Measurement (Mathematics I), Statistic (Mathematics I).
- [7] Pattern 2: the theme of the trial lesson is how to construct a trial lesson.
- [8] Pattern 1: the mathematical contents is Task-based Learning (Mathematics I)
- [9] Pattern 2: the theme of the trial lesson is assessment.
- [10] Pattern 1: the mathematical contents is Permutation, Combination and Probability (Mathematics A)
- [11] Pattern 2: the theme of the trial lesson is motivation.
- [12] Pattern 1: the mathematical contents is some nature of Integer (Mathematics A), some nature of Plane geometry and Space geometry (Mathematics A)
- [13] Pattern 2: the theme of the trial lesson is how to use a blackboard or other teaching tool (include ICT).
- [14] Pattern 1: the mathematical contents is Task-based Learning (Mathematics A)
- [15] Pattern 2: the theme of the trial lesson is Dialogue between students and teachers.